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[BACKGROUND]

- In Taiwan, the National Health Insurance (NHI) system provided universal coverage, and the drug copayment policy was enacted with tiers of copayment for outpatient prescription drugs based on total drug expenditure.
- However, studies on the impacts of drug copayment policy in Taiwan are very limited, and studies characterizing prescriptions with copayment in comparison with their counterparts (copayment-waving ones) is still lacking.

[OBJECTIVE]

- To characterize prescriptions with drug copayment at outpatient visits in comparison with their counterparts between 2009 and 2018 in Taiwan. Patients' and healthcare providers' characteristics were also examined.

[METHOD]

- Study Design:** retrospective descriptive study
 - Study period: 2009-2018
 - Data source: Taiwan's National Insurance Research Database (NHIRD), with demographics, prescription and healthcare characteristics included
 - Study subjects: 1 million beneficiaries (sampled randomly from the Registry of Beneficiaries)
- Study variables:** compared between prescription groups
 - Drug expenditure per prescription: total drug expenditure, drug copayment, drug NHI payment (NTD \$1 = USD \$0.0325, currency rate in December 2018)
 - Number of medications per prescription
 - Days of supply per prescription
 - Scenarios for copayment exemption
 - Patient and healthcare provider characteristics: age, gender, hospital accreditation level, specialty
- Since prescriptions fully paid by the NHI could be: (1) drug expenditures under USD \$3.25 or (2) patient meets the exemption scenarios, additional analyses were restricted to those costing over USD \$3.25.

[RESULTS]

- Among 136,704,606 drug prescriptions identified between 2009 and 2018, 85.6% of them were fully covered by the NHI. Even though patients paid out-of-pocket, patient copayment accounts for less than 15% of total drug expenditures on average, and proportion of prescriptions met the lowest tier of copayment (USD \$0.65) rising from 38.2% in 2009 to 43.1% in 2018.
- For medical centers and regional hospitals, refillable prescriptions were the major cause of copayment exemptions (54.1% and 51.7%), while total drug expenditures \leq USD \$3.25 ranked first in district hospitals and clinics (45.6% and 82.5%).
- To focus on impacts of exemption scenarios decided before prescribing, prescriptions costing over USD \$3.25 were selected. The average drug expenditures with or without drug copayment were USD \$17.53 and \$27.16, respectively ($p < 0.001$), while the number of medications with or without copayment were 3.3, 2.9, respectively ($p < 0.001$).

Figure 1. Percentage of prescriptions with drug copayment, 2009-2018

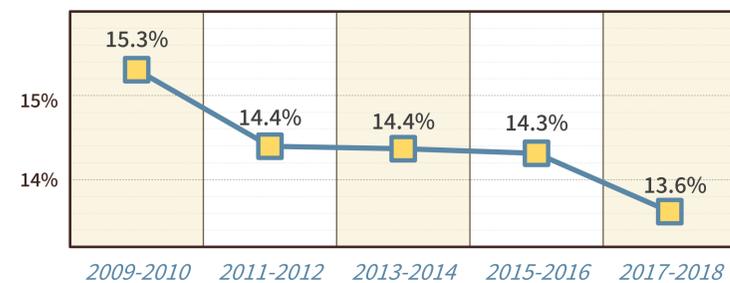


Figure 2. Composition of drug expenditures in prescriptions with drug copayment

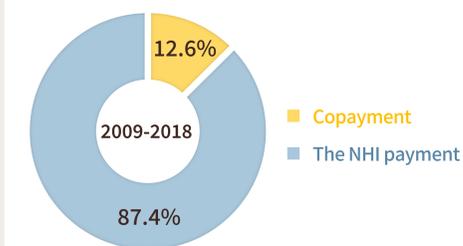


Figure 3. Distribution of drug copayment amounts in different hospital accreditation levels

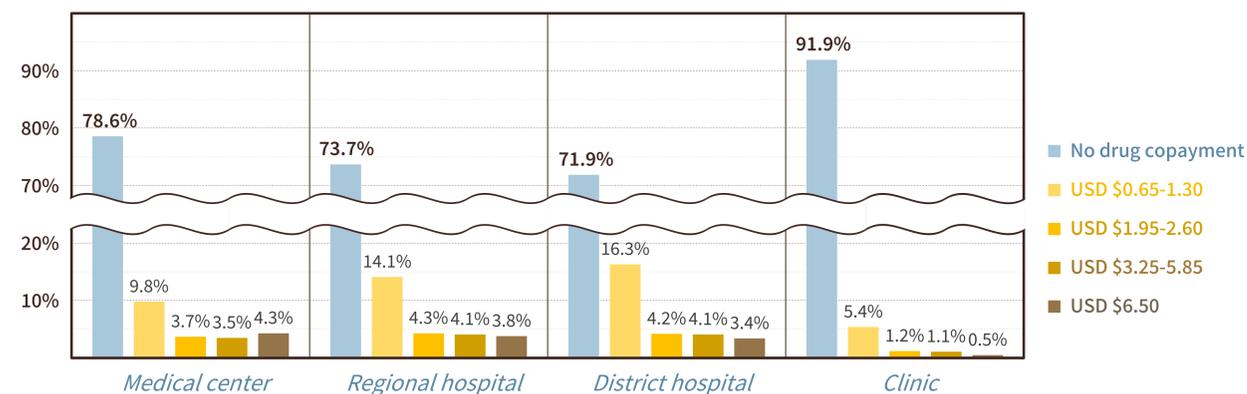


Table 1. Expenditure composition in prescriptions with drug copayment, 2009-2018

	2009-2010	2011-2012	2013-2014	2015-2016	2017-2018
NHI payment (USD), mean (%)	15.19 (86.4)	14.37 (86.5)	15.57 (87.6)	16.09 (88.3)	15.35 (88.2)
Patient copayment (USD), mean (%)	2.39 (13.6)	2.24 (13.5)	2.21 (12.4)	2.14 (11.7)	2.06 (11.8)
Copayment amount					
\$ 0.65, n (%)	1450304 (38.7)	1608784 (40.8)	1661526 (41.2)	1762206 (42.8)	1662042 (43.5)
\$ 1.30, n (%)	584784 (15.6)	649458 (16.5)	680480 (16.9)	679856 (16.5)	638776 (16.7)
\$ 1.95, n (%)	360066 (9.6)	372964 (9.5)	369858 (9.2)	376772 (9.2)	404748 (10.6)
\$ 2.60, n (%)	235518 (6.3)	243596 (6.2)	241102 (6.0)	259044 (6.3)	240042 (6.3)
\$ 3.25, n (%)	179360 (4.8)	183074 (4.6)	194244 (4.8)	193538 (4.7)	168292 (4.4)
\$ 3.90, n (%)	140352 (3.7)	145036 (3.7)	148624 (3.7)	148032 (3.6)	120870 (3.2)
\$ 4.55, n (%)	105108 (2.8)	109756 (2.8)	112916 (2.8)	104048 (2.5)	84846 (2.2)
\$ 5.20, n (%)	91512 (2.4)	95892 (2.4)	91432 (2.3)	78572 (1.9)	66362 (1.7)
\$ 5.85, n (%)	74492 (2.0)	71828 (1.8)	70272 (1.7)	63682 (1.5)	53334 (1.4)
\$ 6.50, n (%)	524490 (14)	463986 (11.8)	460236 (11.4)	448522 (10.9)	379520 (9.9)

Table 2. Exemption scenarios in prescriptions without drug copayment, 2009-2018

	2009-2010	2011-2012	2013-2014	2015-2016	2017-2018
Drug expenditures \leq USD \$3.25, n (%)	14586352 (70.4)	16166538 (68.9)	15602338 (64.9)	15457184 (62.8)	14735388 (60.8)
Refillable prescriptions, n (%)	2907160 (14.0)	3871474 (16.5)	4677954 (19.5)	5384848 (21.9)	5508660 (22.7)
Age \leq 3 y or \geq 100 y, n (%)	1118986 (5.4)	1066392 (4.5)	1102188 (4.6)	993436 (4.0)	956186 (3.9)
Veterans, n (%)	600730 (2.9)	688378 (2.9)	759358 (3.2)	810926 (3.3)	855400 (3.5)
Catastrophic illness patients, n (%)	521878 (2.5)	632888 (2.7)	752016 (3.1)	841430 (3.4)	1049216 (4.3)
Remote areas, n (%)	410218 (2.0)	452150 (1.9)	453714 (1.9)	455044 (1.8)	464052 (1.9)
Low-income households, n (%)	297204 (1.4)	393564 (1.7)	458612 (1.9)	451630 (1.8)	441550 (1.8)

Table 3. Prescriptions' characteristics between copayment groups

	Drug expenditures	Medications	Days of supply, n (%)			
	mean (95% CI)	mean (SD)	\leq 3	4-7	8-27	\geq 28
with drug copayment (all, drug expenditures > USD \$3.25)	539.4(538.8-540.0)	3.3 (1.9)	6.9 %	27.2 %	23.8 %	42.1 %
without drug copayment (all)	332.5(332.3-332.7)	2.0 (1.7)	62.9 %	8.9 %	2.8 %	25.5 %
without drug copayment (drug expenditures > USD \$3.25)	836.0(835.4-836.7)	2.9(2.1)	20.5 %	5.9 %	3.4 %	70.3 %

[CONCLUSIONS]

- Copayment for prescription drugs decreased over time in terms of the prevalence among all prescriptions and the percentage in total expenditures during 2009 to 2018 in Taiwan.
- Patients with copayment exemptions have higher drug utilization and expenditures.
- Patients' and healthcare providers' characteristics affect impacts of copayment policy.